

IN THE CLAIMS

Amend the claims as follows:

14 J 16. (amended) An HLA-DR typing process comprising the steps of restricting DNA isolated from the individual to be typed with at least one restriction endonuclease; size fractionating the restricted DNA; hybridizing the size-fractionated DNA to a DNA sequence of any one of claims 23-24 and 34-39 [1 to 8] and detecting the areas of hybridization.

J 20. (amended) An HLA-DR typing kit characterized by a DNA sequence of any one of claims 23-24 and 34-39 [1 to 8].

J Kindly add the following claims:]

23. A DNA sequence encoding a portion of at least one β -chain antigen of the HLA-DR locus of the human lymphocyte antigen complex, said DNA sequence being selected from the group consisting of:

J 3 (a) the DNA inserts DR- β -A, DR- β -B and DR- β -C,
J 6 (b) the expressed portion of the DNA inserts DR- β -A, DR- β -B and DR- β -C,
J 6 (c) DNA sequences that hybridize under high criterium to any of the foregoing sequences,
J 6 (d) DNA sequences that, upon expression, code for a portion of a polypeptide encoded by any one of the foregoing DNA inserts, said portion comprising a region of mismatch between the polypeptides coded for by any two of the foregoing DNA inserts, and which hybridize under high criterium thereto, and

(e) DNA sequences coding on expression for the polypeptides coded for by the expression of any of the foregoing DNA sequences or DNA inserts.

24. The DNA sequence of claim 23, wherein said DNA sequence (b) which hybridizes to said DNA sequence (a) is selected from the group consisting of:

(f) the DNA insert of DR- β -D,

(g) DNA sequences which hybridize under high criterium to the DNA insert of DR- β -D,

(h) DNA sequences that, upon expression, code for a portion of the polypeptide encoded by DNA insert DR- β -D, said portion comprising a region of mismatch between polypeptides coded for by said DNA insert and any one of DNA inserts DR- β -A, DR- β -B and DR- β -C, and

(i) DNA sequences coding on expression for the polypeptides coded for by the expression of any of the foregoing DNA sequences or inserts.

25. A DNA sequence selected from the group consisting of: TGGASCTGCTTAAGTCTGA, TCCTGGAGAGACACTTCCA, GGGGCCAGGTGGACAATTA, TGGAGCAGGTTAACATGA, TCCTGGACAGATACTTCA, GGGCCGCGGTGGACACCTA and GCTTCGACAGCGACGTGGG.

26. A recombinant DNA molecule comprising a DNA sequence selected from the DNA sequences of any one of claims 23-24 and 31-39. *Not in a passing claim*

*or 30. 01 n
see 30. 01 n*

27. The recombinant DNA molecule of claim 26, wherein the DNA sequence is operatively linked to an expression control sequence in said recombinant DNA molecule.

28. A process for producing a DNA sequence encoding at least one β -chain antigen of the HLA-DR locus of the human lymphocyte antigen complex, or a portion thereof, comprising the steps of culturing a host transformed with a recombinant DNA molecule of claim 26, and isolating said DNA sequence.

29. A process for producing a polypeptide which is a β -chain antigen of the HLA-DR locus of the human lymphocyte antigen complex, or a portion thereof, comprising the steps of culturing a host transformed with a recombinant DNA molecule of claim 27 and collecting the polypeptide.

30. The HLA-DR typing process of claim 16 wherein the hybridization control is a 19-mer of the formula

GCTTCGACAGCGACGTGGG.

31. A DNA sequence specific to an HLA DR- β -chain locus, said DNA sequence being specific to a polymorphic region of said locus to allow determination of one or more HLA alleles for use in HLA DR- β typing, said polymorphic region being encoded by DNA selected from the group consisting of:

- (a) DNA sequences encoding amino acids 8-14 of said locus;
- (b) DNA sequences encoding amino acids 26-32 of said locus;

3

13

(c) DNA sequences encoding amino acids 72-78 of said locus;

(d) portions of any one of the foregoing DNA sequences which are specific to said polymorphic region;

(e) DNA sequences which are complementary to any of the foregoing DNA sequences; and

(f) DNA sequences which are degenerate to any of the foregoing DNA sequences.

32. A DNA sequence specific to an HLA Class II β -chain locus, said DNA sequence being specific to a polymorphic region of said locus to allow determination of one or more HLA alleles for use in HLA β typing, said polymorphic region being encoded by DNA selected from the group consisting of:

(a) DNA sequences encoding amino acids 8-14 of said locus;

(b) DNA sequences encoding amino acids 26-32 of said locus;

(c) DNA sequences encoding amino acids 72-78 of said locus;

(d) portions of any one of the foregoing DNA sequences which are specific to said polymorphic region;

(e) DNA sequences which are complementary to any of the foregoing DNA sequences; and

(f) DNA sequences which are degenerate to any of the foregoing DNA sequences.

33. A DNA sequence specific to an HLA DR- β -chain locus, said DNA sequence being specific to a conserved region of said locus to allow determination of one or more HLA alleles

for use in HLA typing, said conserved region comprising a DNA sequence selected from the group consisting of:

- (a) DNA sequences encoding amino acids 39-45 of said locus;
- (b) portions of the foregoing DNA sequences which are specific to said conserved region;
- (c) DNA sequences which are complementary to the foregoing DNA sequences; and
- (d) DNA sequences which are degenerate to any of the foregoing DNA sequences.

34. The DNA sequence of claim 23, wherein said DNA sequence (d) comprises a DNA sequence selected from the group consisting of:

(a) DNA sequences encoding amino acids:

- (i) 8-14,
- (ii) 26-32, or
- (iii) 72-78

of the polypeptide coded for by any one of said DNA inserts, and

(b) fragments of said DNA sequences.

35. The DNA sequence of claim 24, wherein said DNA sequence (d) comprises a DNA sequence selected from the group consisting of:

(a) DNA sequences encoding amino acids:

- (i) 8-14,
- (ii) 26-32, or
- (iii) 72-78

of the polypeptide coded for by any one of said DNA inserts, and

(b) fragments of said DNA sequences.

36. The DNA sequence of claim 23, wherein said DNA sequence (d) comprises a DNA sequence selected from the group consisting of:

(a) DNA sequences encoding amino acids 39-45 of the polypeptide coded for by any one of said DNA inserts, and

(b) fragments of said DNA sequences.

37. The DNA sequence of claim 24, wherein said DNA sequence (d) comprises a DNA sequence selected from the group consisting of:

(a) DNA sequences encoding amino acids 39-45 of the polypeptide coded for by any one of said DNA inserts, and

(b) fragments of said DNA sequences.

38. A DNA sequence having the formula:

GGGGACACCCGACCACGTTCTTGGAGCTGCTTAAGTCTGAGTGTCAATTCT
TCAATGGGACGGAGCGGGTGGGTTCTGGAGAGACACTTCCATAACCAGGA
GGAGTACGCGCGCTTCGACAGCGACGTGGGGAGTACCGGGCGGTGAGGGAG
CTGGGGCGGCCTGATGCCGAGTACTGGAACAGCCAGAAGGACCTCCTGGAGC
AGAAGCAGGGCCAGGTGGACAATTACTGCAGACACAACGACGGGTTGTGGA
GAGCTTCACAGTGCAGCGCGAGTCCATCCTCAGGTGACTGTGTATCCTGCA
AAGACCCAGCCCCCTGCAGCACCACACCTCCTGGCTGCTCTGTGAGTGGTT
TCTATCCAGGCAGCATTGAAGTCAGGTGGTCCGGAACGGCCAGGAAGAGAA
GGCTGGGGTGGTGTCCACGGGCTGATCCAGAATGGAGACTGGACCTTCCAG

ACCCTGGTATGCTAGAAACATTCCTGGAGTGGAGAGGTTACACCTGCC
AAGTGGAGCACCCAAGCGTAACGAGCCCTCACAGTGAATGGAGTGCACCG
GTCTGAATCTGCACAGAGCAAGATGCTGAGTGGAGTCGGGGCTTGTGCTG
GGCCTGCTCTCCTGGGGCCGGGCTGTTCATCTACTTCAGGAATCAGAAAG
GACACTCTGGACTTCAGCCAACAGGATTCCCTGAGC.

39. A DNA sequence having the formula:

GGGGACACCCGACCACGTTCTGGAGCAGGTTAACATGAGTGTCAATTCT
TCAACGGGACGGAGCGGGTGGGTTCTGGACAGATACTTCTATCACCAAGA
GGAGTACGTGCGCTTCGACAGCGACGTGGGGAGTACCGGGCGGTGACGGAG
CTGGGGCGGCCTGATGCCGAGTACTGGAACAGCCAGAAGGACCTCCTGGAGC
AGAAGCGGGCGCGGTGGACACCTACTGCAGACACAACGACGGGTTGGTGA
GAGCTTCACAGTGCAGCGCGAGTCTATCCTGAGGTGACTGTGTATCCTGCA
AAGACCCAGCCCCCTGCAGCACCAACCTCCTGGCTGCTGTGAATGGTT
TCTATCCAGGCAGCATTGAAGTCAGGTGGTCCGGAACGGCCAGGAAGAGAA
GACTGGGGTGGTGTCCACAGGCCTGATCCAGAATGGAGACTGGACCTCCAG
ACCCCTGGTATGCTGGAAACAGTTCTCGGAGTGGAGAGGTTACACCTGC
CAAGTGGAGCACCCAAGCCTGACGAGCCCTCACAGTGAATGGAGAGCA
CGGTCTGAATCTGCACAGAGCAAGATGCTGAGTGGAGTCGGGGCTCGTG
CTGGGCCTGCTCTCCTGGGGCCGGGCTGTTCATCTACTTCAGGAATCAG
AAAGGACACTCTGGACTTCAGCCAACAGGATTCCCTGAGC.

40. An HLA typing kit comprising at least one DNA sequence according to any one of claims 31-33.

41. An HLA typing process comprising the steps of restricting DNA isolated from an individual to be typed with at least one restriction endonuclease; size fractionating the restricted DNA; and hybridizing the size-fractionated DNA to a DNA sequence according to any one of claims 31-33.

42. An HLA typing process comprising the steps of hybridizing DNA in a sample to be tested to a DNA sequence according to any one of claims 31-33 and detecting the hybridization between said DNA and said DNA sequence.

43. The HLA typing process of claim 42, further comprising the step of comparing said hybridization to hybridization between DNA of known HLA type and said DNA sequence.

44. An HLA-DR typing process comprising the steps of hybridizing DNA in a sample to be tested to a DNA sequence according to any one of claims 23-24 and 34-39 and detecting the hybridization between said DNA and said DNA sequence.

45. The HLA-DR typing process of claim 44, further comprising the step of comparing said hybridization to hybridization between DNA of known HLA-DR type and said DNA sequence.

46. The HLA-DR typing kit of claim 20, further comprising a 19-mer hybridization control of the formula GCTTCGACAGCGACGTGGG.

47. The HLA typing kit of claim 40, further comprising a 19-mer hybridization control of the formula GCTTCGACAGCGACGTGGG.